FOREST STAND DELINEATION REPORT

for

Annapolis Neck, LLC
City of Annapolis, Maryland

Prepared for:

Bay Engineering, Inc.
190 Admiral Cochrane Drive, Suite 175
Annapolis, Maryland 21401

Prepared by:

Michael J. Klebasko 10/9/14

Michael J. Klebasko, P.W.S. **Date**

Klebasko Environmental, LLC
8373 Piney Orchard Parkway, Suite 207
Odenton, Maryland 21113
Phone: (410) 672-5990
FAX: (410) 672-5993

1. INTRODUCTION

This report is prepared in accordance with the requirements outlined in the Maryland Department of Natural Resources' *State Forest Conservation Technical Manual*[1], as well as City of Annapolis guidelines. According to the *State Forest Conservation Manual*, the purpose of a Forest Stand Delineation (FSD) is to determine the most suitable and practical areas for forest conservation during the preliminary design and review stages of development. The preparer of this report, Michael J. Klebasko, is a qualified professional under COMAR 08.19.06.01, and the field study was conducted on August 28, 30, and 31, 2012, on September 5, 2012, and on October 2 and 7, 2014.

2. SITE LOCATION AND CONDITIONS

The 5.28-acre Annapolis Neck, LLC Property (study area) is located south of the intersection of Bay Ridge Road and Georgetown Road, in Anne Arundel County, Maryland (Figure 1). The study area is bordered to the west by an existing commercial building, to the south by existing single-family homes along Old Annapolis Neck Road, and to the east by the recently constructed Bay Village Drive. The site is currently comprised of numerous single family homes and mixed-hardwood forest, of which 1.21 acres qualify as forest for purposes of the Forest Stand Delineation (FSD).

3. SOILS

The U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS) has produced soil surveys for every county within the State of Maryland. The soil surveys map the locations of the various soil types throughout each county and provide a description of each soil type. The updated soil survey for Anne Arundel County (Figure 2) that can be accessed on-line at http://websoilsurvey.nrcs.usda.gov revealed that four (4) soil types are mapped within the study area. One of the soil types has been classified as partially hydric by NRCS. The soil descriptions are listed in Table 1, along with the erodibility factors for each. Soils are considered highly erodible if the K-factor exceeds 0.35.

4. STEEP SLOPES

According to section 17.04.830 of the City Code, a steep slope is defined as a slope of greater than 15 percent grade. Naturally occurring steep slopes do not exist on this property. However, an area of man-made steep slopes exists at the southern edge of the abandoned C&C Liquors parking lot, and its location is denoted on the FSD Plan.

5. RARE, THREATENED & ENDANGERED SPECIES

In a letter dated October 16, 2012, the Maryland Department of Natural Resources - Wildlife and Heritage Division determined that there are no State or Federal records for rare, threatened, or endangered species on the property (Figure 3). In addition, no threatened or endangered species were observed during completion of the forest stand delineation field studies.

---

[1] Maryland Department of Natural Resources. 1997. *State Forest Conservation Technical Manual - 3rd Edition*. Baltimore, Maryland.

6. WETLANDS, STREAMS & 100-YEAR FLOODPLAIN

The limits of jurisdictional waters of the U.S. (including non-tidal wetlands) were delineated by Michael J. Klebasko and Kenneth R. Wallis of Klebasko Environmental, LLC. in August, September, and October, 2012. An isolated, man-made, non-tidal wetland pocket was identified in a wooded area near the center of the site. This 6,860-square foot wetland pocket appears to have been created when a driveway was constructed along its eastern edge, thus inhibiting drainage. This condition was exacerbated when the small culvert installed under the driveway became blocked, thus preventing run-off from draining out of the depression. The canopy in the wetland is comprised of red maple (*Acer rubrum*) and sweet gum (*Liquidambar styraciflua*), while the herbaceous layer is dominated by common greenbriar (*Smilax rotundifolia*). The jurisdictional limits of the wetland pocket were confirmed by Judy Broersma of the Maryland Department of the Environment (MDE). In addition, a Letter of Authorization (Figure 4) was subsequently issued by MDE on September 17, 2014 to permanently impact the entire 6,860-square foot wetland pocket and its 25-foot buffer. Because the wetland pocket was confirmed to be isolated by MDE, no authorization was required from the U.S. Army Corps of Engineers.

Any water leaving this property drains off-site via sheet flow in a southeasterly direction into a recently constructed storm drain inlet adjacent to Bay Village Drive. The water then travels within a storm drain pipe for a distance of approximately 700 feet before emptying into a storm water management pond. Water released through the pond's riser is then conveyed within the storm drain system for an additional 1,000 feet before being ultimately discharged into an unnamed tributary to Lake Ogleton, which outlets to the Severn River. There is no mapped FEMA 100-year floodplain located on this property.

7. METHODOLOGY

Forests are defined in the Forest Conservation Act (Nat. Res. Art. 5-1601) as a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or more, having a minimum density of at least 100 trees per acre with a minimum of 50% of those trees having diameters at least 2 inches at breast height. Forest also includes areas in which the trees have been cut but not cleared of their stumps.

Prior to conducting the field study, a base map was created by overlaying known environmental features (i.e. wetlands, streams, mapped soil types) and existing site conditions (i.e. tree-line, topography, structures) onto the map. The base map was then used to determine possible forest stand boundaries and to establish a sampling strategy for the site. The manual requires a minimum of one 1/10 acre sample plot per 4 acres of forest stand area; a minimum of two plots per forest stand; and a minimum of three plots for the total forested area of the site.

A Biltmore Stick was used to determine the size of trees generally less than 28-inches in diameter, while a 50-foot retractable D-tape was used to measure the larger trees. A Basal Area 10 Factor prism was used to collect information on tree densities at each sample point. For this study, three (3) data point locations were used to collect the required field data. Because of the small size of Stand B, only one (1) data point was necessary for this stand. Their locations are indicated on the FSD Plan and each data point was marked in the forest with red ribbon and numbered.

Data collected at each sampling point and noted on the attached Forest Stand Delineation Field Sampling Data Sheets included such information as basal area, percent canopy closure, percent invasive species cover, shrub and herbaceous species, and percent downed woody debris. In addition, any specimen trees (trees with diameters-at-breast height greater than 30 inches) or trees with diameters within 75% of a State Champion were also flagged and their locations demarcated on the FSD Plan.

The information collected in the field was then used to calculate a structure value for each forest stand. The structure value places each forest stand in one of three categories: Poor, Good and Priority. This data aids in determining the overall value of each forest stand.

8. STAND DESCRIPTIONS

The forest stand delineation field study revealed that the existing forest on the site can be divided into two (2) stands based on age and/or species composition.

STAND A

Stand Composition and Structure

Stand A (0.75 acres) is a small, mature, mixed-hardwood forest dominated by yellow poplar (*Liriodendron tulipifera*), red maple, northern red oak (*Quercus rubra*), and chestnut oak (*Quercus montana*), with an understory containing American holly (*Ilex opaca*) and black cherry (*Prunus serotina*). The relatively dense herbaceous layer is generally dominated by invasive and nuisance species such as bittersweet (*Celastrus orbiculata*), English ivy (*Hedera helix*), Japanese honeysuckle (*Lonicera japonica*), and poison ivy (*Toxicodendron radicans*). While this stand has an average DBH of 25 inches (Appendix A), over 80% of the larger trees are rated in fair to poor condition. Furthermore, the Forest Structure Analysis Sheet indicates that this stand has a structure value of 12, which puts it in the "Good" rating.

Stand Condition

The presence of climbing invasive vines (i.e. English ivy and bittersweet) has adversely affected the overall health of this stand either through the formation of thick ground cover or through excessive growth on the canopy trees. The invasive plant cover limits the regenerative potential of this stand by preventing the establishment of native plants. In addition, some of the larger trees have larger limbs broken off as a result of recent strong winds. Because this stand is bordered by existing residential homes on nearly all sides, human disturbances such as trash deposition and invasive species introduction, are evident throughout the stand.

Stand Function

Because of its relatively small size, high percent cover of invasive species, and being surrounded by existing residential and commercial development, Stand A would be considered of lower value for wildlife habitat. Stand A would also have minimal value for water quality protection, especially in light of the fact that no streams exist within 1,000 feet of this forest stand and that all run-off draining from this property ultimately is conveyed to a recently constructed stormwater management

pond. While this stand does offer an aesthetic benefit as a forested area by providing a visual buffer from surrounding properties, because of its small size and location on private property, Stand A provides minimal potential for passive recreation.

Because this stand is small and isolated, contains a relatively high percent cover of invasive and nuisance species, and has a significant portion of its existing trees rated in fair to poor condition, Stand A should be considered moderate priority for retention.

STAND B

Stand Composition and Structure

Stand B (0.46 acres) is a bottomland, mixed-hardwood forest generally dominated by red maple and sweetgum. Located in the center of this stand is a small, isolated, non-tidal wetland. This stand has an average DBH of 19 inches (Appendix B), and a dense herbaceous layer that is dominated almost entirely by common greenbrier. The Forest Structure Analysis Sheet indicates that this stand has a structure value of 11, which gives it a "Good" rating.

Stand Condition

Many of the existing trees, particularly within and around the perimeter of the wetland pocket, are exhibiting signs of stress in the form of crown dieback. The stress is likely caused by the culvert blockage that has extended the length of time that standing water occurs in the wetland pocket. In addition, invasive vines growing on the trees are also adding to the stress. Overall, most of the trees in this stand are rated in fair to poor condition. Because of the thick ground cover of common greenbriar, regenerative potential within this stand is low.

Stand Function

Because of its relatively small size, and being surrounded by existing residential and commercial development, Stand B would also be considered of lower value for wildlife habitat. Similar to Stand A, Stand B would also have minimal value for water quality protection, especially in light of the fact that no streams exist within 1,000 feet of this forest stand and that all run-off draining from this property ultimately is conveyed to a recently constructed stormwater management pond. In addition, MDE has issued a Letter of Authorization to permanently impact the entire isolated wetland and its 25-foot buffer. This stand does offer an aesthetic benefit as a forested area by providing a visual buffer from surrounding properties. However, because of its small size, dense cover of common greenbriar, and location on private property, Stand B provides minimal potential for passive recreation.

Stand B, because of its small size, isolated condition, and moderate forest structure, would typically be considered a low priority for retention. While the presence of the isolated nontidal wetland pocket requires Stand B to be considered a high priority for retention in this case, MDE has already conducted an environmental review and issued a Letter of Authorization to permanently impact the entire wetland pocket and its buffer.

TABLE 1: MAPPED SOIL TYPES			
Map Unit	**Soil Description**	**K-factor (whole soil)**	**Hydric Rating**
AoC	Annapolis loamy sand, 5-10% slopes	0.20	No
AuB	Annapolis-Urban land complex, 0-5% slopes	0.28	No
CkA	Colemantown fine sandy loam, 0-2% slopes	0.28	Partially
Uz	Urban land	0.28	No

Source: *http://websoilsurvey.nrcs.usda.gov (October 1, 2012)*

TABLE 2: EXISTING TREE TABLE					
No.	**Common Name**	**Scientific Name**	**DBH (inches)**	**Condition Rating**	**Comments**
1	white oak	*Quercus alba*	41*	Poor	crown dieback -declining health
2	elm	*Ulmus spp.*	35*	Poor	crown dieback, weak crotch, cavities in trunk, broken limbs
3	white oak	*Quercus alba*	36*	Good	
4	yellow-poplar	*Liriodendron tulipifera*	48*	Fair	Some crown dieback - possible declining health
5	yellow-poplar	*Liriodendron tulipifera*	31*	Poor	crown dieback, shares root system with #6
6	yellow-poplar	*Liriodendron tulipifera*	37*	Poor	crown dieback, vines, weak crotch
7	sweetgum	*Liquidambar styraciflua*	35*	Fair	crown dieback, storm damage, broken limbs
8	yellow-poplar	*Liriodendron tulipifera*	31*	Fair	leaning, some crown dieback, vine cover (English ivy, poison ivy)
9	black cherry	*Prunus serotina*	13	Poor	cavity
10	Japanese maple	*Acer palmatum*	9	Good	
11	chestnut oak	*Quercus montana*	21	Fair	shares root system with #12
12	chestnut oak	*Quercus montana*	18	Fair	shares root system with #11
13	white oak	*Quercus alba*	30*	Good	
14	black cherry	*Prunus serotina*	21	Poor	cavity
15	black cherry	*Prunus serotina*	6	Good	
16	sassafras	*Sassafras albidum*	15	Fair	
17	pin oak	*Quercus palustris*	14	Fair	crown dieback

18	sweetgum	*Liquidambar styraciflua*	28	Fair	
19	sweetgum	*Liquidambar styraciflua*	22	Fair	
20	yellow-poplar	*Liriodendron tulipifera*	15	Fair	poor form
21	black cherry	*Prunus serotina*	21	Good	
22	yellow-poplar	*Liriodendron tulipifera*	30*	Good	vine cover (poison ivy)
23	yellow-poplar	*Liriodendron tulipifera*	10	Good	
24	yellow-poplar	*Liriodendron tulipifera*	25	Fair	split at base of trunk
25	yellow-poplar	*Liriodendron tulipifera*	23	Fair	split at base of trunk
26	yellow-poplar	*Liriodendron tulipifera*	24	Poor	cavity
27	black cherry	*Prunus serotina*	21	Poor	
28	red maple	*Acer rubrum*	8	Fair	
29	yellow-poplar	*Liriodendron tulipifera*	27	Fair	storm damage
30	yellow-poplar	*Liriodendron tulipifera*	9	Good	
31	northern red oak	*Quercus rubra*	19	Fair	storm damage, broken limbs
32	yellow-poplar	*Liriodendron tulipifera*	27	Poor	lightning strike
33	yellow-poplar	*Liriodendron tulipifera*	19	Poor	cavity
34	red maple	*Acer rubrum*	7	Good	
35	red maple	*Acer rubrum*	7	Fair	
36	yellow-poplar	*Liriodendron tulipifera*	14	Poor	girdled
37	yellow-poplar	*Liriodendron tulipifera*	30*	Fair	storm damage
38	yellow-poplar	*Liriodendron tulipifera*	10	Good	
39	red maple	*Acer rubrum*	18	Poor	broken leader
40	yellow-poplar	*Liriodendron tulipifera*	11	Poor	
41	black cherry	*Prunus serotina*	8	Fair	
42	black cherry	*Prunus serotina*	7	Poor	
43	black cherry	*Prunus serotina*	6	Poor	
44	white oak	*Quercus alba*	14	Poor	cavity
45	chestnut oak	*Quercus montana*	31*	Good	
46	yellow-poplar	*Liriodendron tulipifera*	20	Fair	storm damage, broken limbs
47	elm	*Ulmus spp.*	44*	Poor	multi-trunk - split at 5.5', weak crotch, growing on fill material, vine cover (English ivy, bittersweet)
48	black locust	*Robinia pseudoacacia*	8	Poor	leaning
49	black locust	*Robinia pseudoacacia*	6	Poor	leaning severely
50	elm	*Ulmus spp.*	10	Poor	
51	elm	*Ulmus spp.*	10	Poor	leaning, vine cover, broken limbs

52	elm	*Ulmus spp.*	19	Poor	rooted on fill slope
53	elm	*Ulmus spp.*	9	Poor	rooted on fill slope
54	elm	*Ulmus spp.*	13	Poor	rooted on fill slope
55	elm	*Ulmus spp.*	18	Poor	rooted on fill slope
56	elm	*Ulmus spp.*	9	Poor	leaning, rooted on fill slope
57	elm	*Ulmus spp.*	8	Poor	leaning
58	elm	*Ulmus spp.*	12	Poor	leaning
59	elm	*Ulmus spp.*	12	Poor	poor form, leaning, vine cover
60	elm	*Ulmus spp.*	10	Poor	leaning
61	elm	*Ulmus spp.*	7	Fair	vine cover, leaning
62	elm	*Ulmus spp.*	8	Fair	roots impacted by parking lot
63	elm	*Ulmus spp.*	17	Fair	roots impacted by parking lot, vines
64	elm	*Ulmus spp.*	14	Fair	roots impacted by parking lot, vines
65	elm	*Ulmus spp.*	9	Fair	roots impacted by parking lot, vines
66	elm	*Ulmus spp.*	7	Fair	vine cover, leaning
67	elm	*Ulmus spp.*	13	Fair	vines
68	elm	*Ulmus spp.*	10	Poor	leaning, vines
69	elm	*Ulmus spp.*	13	Fair	multi-stem trunk,
70	elm	*Ulmus spp.*	11	Poor	vines, leaning
71	elm	*Ulmus spp.*	11	Poor	vines, leaning
72	elm	*Ulmus spp.*	7	Poor	poor form, vines
73	elm	*Ulmus spp.*	10	Poor	roots impacted by parking lot, vines
74	eastern red cedar	*Juniperus virginiana*	17	Fair	crown dieback, vines
75	elm	*Ulmus spp.*	8	Poor	vines
76	elm	*Ulmus spp.*	7	Poor	leaning, vines
77	American holly	*Ilex opaca*	9	Poor	crown dieback
78	American holly	*Ilex opaca*	8	Poor	crown dieback
79	American holly	*Ilex opaca*	8	Poor	crown dieback
80	Norway spruce	*Picea abies*	13	Poor	crown dieback, vines
81	American holly	*Ilex opaca*	12	Poor	crown dieback, vines
82	sweetgum	*Liquidambar styraciflua*	25	Fair	shares root system with tree #83
83	sweetgum	*Liquidambar styraciflua*	27	Fair	shares root system with tree #82
84	chestnut oak	*Quercus montana*	14	Fair	dead co-dominant leader
85	red maple	*Acer rubrum*	12	Fair	dead leader
86	yellow-poplar	*Liriodendron tulipifera*	20	Fair	poor form

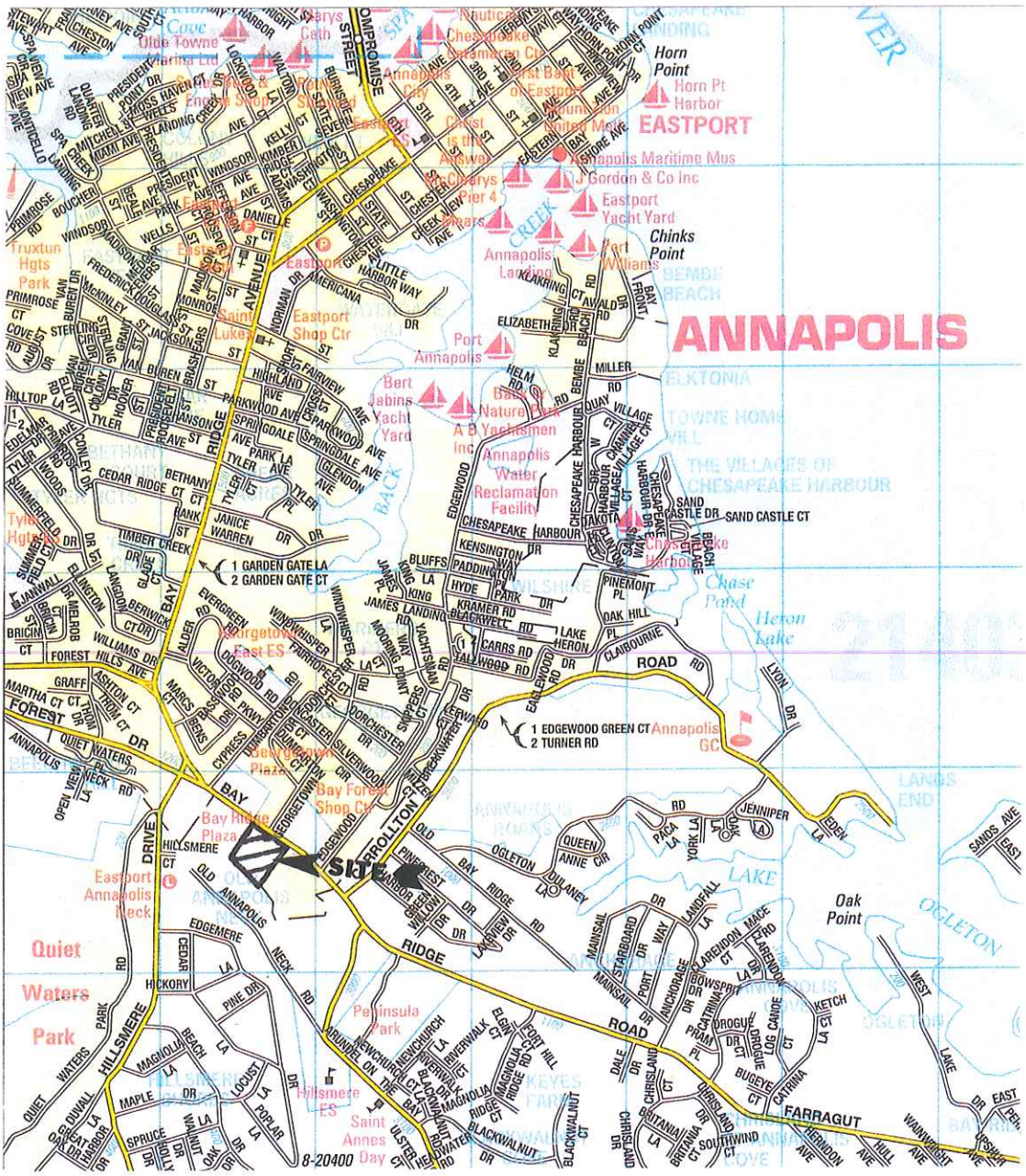
87	yellow-poplar	*Liriodendron tulipifera*	20	Fair	shares root system with tree #88
88	yellow-poplar	*Liriodendron tulipifera*	21	Fair	shares root system with tree #87
89	yellow-poplar	*Liriodendron tulipifera*	26	Fair	crown dieback
90	pin oak	*Quercus palustris*	25	Good	
91	red maple	*Acer rubrum*	18	Fair	
92	American holly	*Ilex opaca*	19	Poor	cavities
93	red maple	*Acer rubrum*	11	Poor	storm damage
94	red maple	*Acer rubrum*	16	Poor	leaning cavity
95	yellow-poplar	*Liriodendron tulipifera*	32*	Poor	lightning strike, cavity
96	white oak	*Quercus alba*	33*	Poor	leaning, poor form, vine cover (poison ivy), shared root system with Tree #95
97	northern red oak	*Quercus rubra*	28	Fair	leaning, buttressed trunk
98	red maple	*Acer rubrum*	24	Good	
99	red maple	*Acer rubrum*	9	Fair	leaning
100	red maple	*Acer rubrum*	9	Fair	poor form
101	black gum	*Nyssa sylvatica*	22	Poor	
102	willow oak	*Quercus phellos*	17	Fair	vine cover, leaning
103	river birch	*Betula nigra*	17	Fair	
104	red maple	*Acer rubrum*	18	Fair	leaning, co-dominant leader cut
105	red maple	*Acer rubrum*	32*	Good	slight lean
106	red maple	*Acer rubrum*	26	Good	
107	yellow-poplar	*Liriodendron tulipifera*	33*	Poor	cavity, broken limbs, crown dieback
108	American holly	*Ilex opaca*	8	Good	
109	yellow-poplar	*Liriodendron tulipifera*	21	Fair	crown dieback
110	red maple	*Acer rubrum*	14	Fair	
111	chestnut oak	*Quercus montana*	33	DEAD	DEAD
112	Norway spruce	*Picea abies*	9	Good	
113	black cherry	*Prunus serotina*	6	Fair	
114	yellow-poplar	*Liriodendron tulipifera*	12	Poor	leaning, shares root system with tree #115
115	yellow-poplar	*Liriodendron tulipifera*	23	Fair	shares root system with tree #114
116	yellow-poplar	*Liriodendron tulipifera*	32*	Poor	Broken off main leader, lightning strike, declining health
117	northern red oak	*Quercus rubra*	28	Poor	Poor form - unbalanced
118	chestnut oak	*Quercus montana*	18	Fair	shares root system with tree #118
119	chestnut oak	*Quercus montana*	21	Fair	shares root system with tree #117

120	chestnut oak	*Quercus montana*	36*	Fair	multi-stem trunk - split at 6'
121	yellow-poplar	*Liriodendron tulipifera*	14	Poor	poor form
122	red maple	*Acer rubrum*	13	Poor	poor form
123	chestnut oak	*Quercus montana*	15	Fair	vine cover
124	mockernut hickory	*Carya tomentosa*	19	Fair	vine cover
125	chestnut oak	*Quercus montana*	24	Fair	shares root system with tree #126
126	chestnut oak	*Quercus montana*	25	Fair	shares root system with tree #125
127	chestnut oak	*Quercus montana*	18	Fair	trunk injury
128	southern red oak	*Quercus falcata*	12	Fair	vine cover, leaning
129	chestnut oak	*Quercus montana*	24	Fair	vine cover, leaning
130	yellow-poplar	*Liriodendron tulipifera*	20	Fair	vine cover
131	chestnut oak	*Quercus montana*	21	Fair	shares root system with tree #132
132	chestnut oak	*Quercus montana*	20	Fair	shares root system with tree #131
133	red maple	*Acer rubrum*	18	Good	
134	sweetgum	*Liquidambar styraciflua*	10	Fair	vine cover
135	chestnut oak	*Quercus montana*	21	Fair	shares root system with tree #136
136	chestnut oak	*Quercus montana*	17	Fair	shares root system with tree #135
137	chestnut oak	*Quercus montana*	19	Fair	vine cover, poor form
138	red maple	*Acer rubrum*	16	Fair	poor form
139	red maple	*Acer rubrum*	9	Fair	poor form, vine cover
140	red maple	*Acer rubrum*	8	Poor	leaning
141	sweetgum	*Liquidambar styraciflua*	12	Fair	crown dieback
142	red maple	*Acer rubrum*	16	Good	
143	red maple	*Acer rubrum*	11	Fair	pest problem
144	red maple	*Acer rubrum*	9	Fair	
145	sweetgum	*Liquidambar styraciflua*	9	Good	
146	elm	*Ulmus spp.*	17	Fair	poor form
147	white oak	*Quercus alba*	8	Good	
148	red maple	*Acer rubrum*	17	Fair	leaning
149	red maple	*Acer rubrum*	19	Good	
150	willow oak	*Quercus phellos*	26	Fair	shares root system with tree #151
151	willow oak	*Quercus phellos*	36*	Fair	shares root system with tree #150
152	pin oak	*Quercus palustris*	23	Fair	crown dieback
153	persimmon	*Diospyros virginiana*	10	Fair	leaning into tree #154
154	red maple	*Acer rubrum*	9	Good	

155	sweetgum	*Liquidambar styraciflua*	25	Good	
156	red maple	*Acer rubrum*	17	Good	
157	sweetgum	*Liquidambar styraciflua*	23	Fair	crown dieback
158	sweetgum	*Liquidambar styraciflua*	21	Fair	crown dieback
159	sweetgum	*Liquidambar styraciflua*	17	Fair	crown dieback
160	red maple	*Acer rubrum*	13	Good	
161	red maple	*Acer rubrum*	10	Fair	shares root system with tree #163
162	red maple	*Acer rubrum*	30*	Poor	Broken off co-dominant leader, severe crown dieback
163	red maple	*Acer rubrum*	26	Fair	shares root system with tree #161
164	sweetgum	*Liquidambar styraciflua*	15	Good	
165	elm	*Ulmus spp.*	42*	Very Poor	twin, one trunk dead, crown dieback, significant decay
166	red maple	*Acer rubrum*	19	Fair	poor form, trunk injury
167	sweetgum	*Liquidambar styraciflua*	21	Good	
168	river birch	*Betula nigra*	19	Good	
169	sweetgum	*Liquidambar styraciflua*	17	Fair	broken limbs
170	red maple	*Acer rubrum*	8	Fair	
171	black gum	*Nyssa sylvatica*	10	Fair	leaning, poor form
172	black gum	*Nyssa sylvatica*	7	Good	
173	black gum	*Nyssa sylvatica*	19	Poor	broken limbs, storm damage
174	southern red oak	*Quercus falcata*	16	Poor	poor form, broken limbs & leaning
175	yellow-poplar	*Liriodendron tulipifera*	16	Good	
176	yellow-poplar	*Liriodendron tulipifera*	25	Fair	Storm damage, broken limbs
177	yellow-poplar	*Liriodendron tulipifera*	30*	Fair	Heavy vine cover (English ivy)
178	mockernut hickory	*Carya tomentosa*	11	Fair	poor form, heavy vine cover
179	red maple	*Acer rubrum*	16	Fair	heavy vine cover
180	black gum	*Nyssa sylvatica*	20	Good	
181	red maple	*Acer rubrum*	25	Good	
182	willow oak	*Quercus phellos*	26	Good	
183	pin oak	*Quercus palustris*	27	Good	
184	willow oak	*Quercus phellos*	26	Good	
185	pin oak	*Quercus palustris*	22	Poor	crown dieback, cavity, broken limbs
186	sweetgum	*Liquidambar styraciflua*	7	Poor	

187	pin oak	*Quercus palustris*	14	Good	
188	persimmon	*Diospyros virginiana*	6	Good	
189	magnolia	*Magnolia spp.*	13	Good	
190	sweetgum	*Liquidambar styraciflua*	24	Poor	storm damage, poor form
191	sweetgum	*Liquidambar styraciflua*	26	Poor	storm damage
192	sweetgum	*Liquidambar styraciflua*	24	Poor	storm damage
193	red maple	*Acer rubrum*	29	Poor	co-dominant leader broken off, dieback, broken limbs
194	red maple	*Acer rubrum*	15	Good	
195	red maple	*Acer rubrum*	17	Poor	severe lean
196	sweetgum	*Liquidambar styraciflua*	16	Fair	broken limbs, crown dieback
197	red maple	*Acer rubrum*	11	Good	
198	sweetgum	*Liquidambar styraciflua*	17	Fair	poor form, crown dieback, lean
199	mulberry	*Morus rubra*	7	Poor	
200	white walnut	*Juglans cinerea*	14	Poor	broken limbs, crown dieback
201	mulberry	*Morus rubra*	7	Good	
202	mulberry	*Morus rubra*	7	Good	
203	mulberry	*Morus rubra*	9,8,9,11, 9,9,8	Good	
204	mulberry	*Morus rubra*	6,11,7	Good	
205	sweet cherry	*Prunus avium*	9,6	Good	
206	sweet cherry	*Prunus avium*	7	Poor	leaning
207	mulberry	*Morus rubra*	13	Poor	leaning
208	red maple	*Acer rubrum*	7	Fair	heavy vine cover
209	mulberry	*Morus rubra*	18	Poor	leaning
210	elm	*Ulmus spp.*	16	Poor	leaning
211	red maple	*Acer rubrum*	19	Fair	crown dieback
212	chestnut oak	*Quercus montana*	25	Poor	Canopy thinning, possible declining health

Existing Specimen Tree



Kiebasko Environmental, LLC
8373 Piney Orchard Parkway, #207
Odenton, Maryland 21113
(410) 672-5990 (office)
(410) 672-5993 (fax)

Annapolis Neck, LLC
Anne Arundel County, MD

FIGURE 1 - Vicinity Map
(Copyright ADC The Map People Permitted Use #21005228)

Scale: 1" = 2,000'

Klebasko Environmental, LLC
8373 Piney Orchard Parkway, #207
Odenton, Maryland 21113
(410) 672-5990 (office)
(410) 672-5993 (fax)

Annapolis Neck, LLC
Anne Arundel County, MD

FIGURE 2 - Soils Map
Source:
http://websoilsurvey.nrcs.usda.gov
(October 2012)

Scale: 1" = 300'

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

October 16, 2012

Kenneth Wallis
Klebasko Environmental LLC
8873 Piney Orchard Parkway, Suite 207
Odenton, MD 21113

RE: Environmental Review for Bay Village Town Center, jct. of Georgetown Rd. and Bay Ridge Rd., Annapolis, Anne Arundel County, MD.

Dear Mr. Wallis:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2012.1363.aa

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION
LETTER OF AUTHORIZATION

AUTHORIZATION NUMBER: 13-NT-0214/201361023

EFFECTIVE DATE: September 17, 2014

EXPIRATION DATE: September 17, 2017

AUTHORIZED PERSON: Mr. Michael H. Abrams
Annapolis Neck, LLC
c/o Glenbrook Properties, Inc.
6508 Old Farm Court
Rockville, Maryland 21213

IN ACCORDANCE WITH ENVIRONMENT ARTICLE §5-503(a) AND §5-906(b), ANNOTATED CODE OF MARYLAND (2007 REPLACEMENT VOLUME), COMAR 26.17.04 AND 26.23.01, AND 26.08.02 AND THE ATTACHED CONDITIONS OF AUTHORIZATIONS, Annapolis Neck, LLC (AUTHORIZED PERSON"), IS HEREBY AUTHORIZED BY THE WATER MANAGEMENT ADMINISTRATION ("ADMINISTRATION") TO CONDUCT A REGULATED ACTIVITY IN A NONTIDAL WETLAND, BUFFER, OR EXPANDED BUFFER, AND/OR TO CHANGE THE COURSE, CURRENT OR CROSS-SECTION OF WATERS OF THE STATE, IN ACCORDANCE WITH THE ATTACHED PLANS APPROVED BY THE ADMINISTRATION ON September 12, 2014 ("APPROVED PLAN") AND PREPARED BY Bay Engineering, Inc. AND INCORPORATED HEREIN, AS DESCRIBED BELOW:

The construction of Bay City Town Center, a mixed use development including a grocery store, space for retail, office and restaurant facilities plus parking and all other required infrastructure. The project permanently impacts 6,860 square feet of isolated, forested nontidal wetlands and 10,109 square feet of regulated nontidal wetlands buffers. The project site is located south of Bay Ridge Road at it's intersection with Georgetown Road in the City of Annapolis.

MD Grid Coordinates N 142302 E 444266

Amanda Sigillito, Chief
Nontidal Wetlands Division

Attachments: Conditions of Authorization
Best Management Practices
Approved Plan Views

cc: WMA Compliance Program (Central Division)
Klebasko Environmental, LLC (Michael Klebasko)

Klebasko Environmental, LLC
8373 Piney Orchard Parkway, #207
Odenton, Maryland 21113
(410) 672-5990 (office)
(410) 672-5993 (fax)

Annapolis Neck, LLC
Anne Arundel County, MD

FIGURE 4A - Letter of Authorization (13-NT-0214/201361023) issued by MDE
(Dated: September 17, 2014)

1. **Validity:** Authorization is valid only for use by Authorized Person. Authorization may be transferred only with prior written approval of the Administration. In the event of transfer, transferee agrees to comply with all terms and conditions of Authorization.
2. **Initiation of Work, Modifications and Extension of Term**: Authorized Person shall initiate authorized activities with two (2) years of the Effective Date of this Authorization or the Authorization shall expire. Authorized Person may submit written requests to the Administration for (a) extension of the period for initiation of work, (b) modification of Authorization, including the Approved Plan, or, (c) not later than 45 days prior to Expiration Date, an extension of the term. Requests for modification shall be in accordance with applicable regulations and shall state reasons for changes, and shall indicate the impacts on nontidal wetlands, streams, and the floodplain, as applicable. The Administration may grant a request at its sole discretion.
3. **Responsibility and Compliance**: Authorized Person is fully responsible for all work performed and activities authorized by this Authorization shall be performed in compliance with this Authorization and Approved Plan. Authorized Person agrees that a copy of the Authorization and Approved Plan shall be kept at the construction site and provided to its employees, agents and contractors. A person (including Authorized Person, its employees, agents or contractors) who violates or fails to comply with the terms and conditions of this Authorization, Approved Plan or an administrative order may be subject to penalties in accordance with §5-514 and §5-911, Department of the Environment Article, Annotated Code of Maryland (2007 Replacement Volume).
4. **Failure to Comply**: If Authorized Person, its employees, agents or contractors fail to comply with this Authorization or Approved Plan, the Administration may, in its discretion, issue an administrative order requiring Authorized Person, its employees, agents and contractors to cease and desist any activities which violate this Authorization, or the Administration may take any other enforcement action available to it by law, including filing civil or criminal charges.
5. **Suspension or Revocation**: Authorization may be suspended or revoked by the Administration, after notice of opportunity for a hearing, if Authorized Person: (a) submits false or inaccurate information in Permit application or subsequently required submittals; (b) deviates from the Approved Plan, specifications, terms and conditions; (c) violates, or is about to violate terms and conditions of this Authorization; (d) violates, or is about to violate, any regulation promulgated pursuant to Title 5, Department of the Environment Article, Annotated Code of Maryland as amended; (e) fails to allow authorized representatives of the Administration to enter the site of authorized activities at any reasonable time to conduct inspections and evaluations; (f) fails to comply with the requirements of an administrative action or order issued by the Administration; or (g) does not have vested rights under this Authorization and new information, changes in site conditions, or amended regulatory requirements necessitate revocation or suspension.
6. **Other Approvals**: Authorization does not authorize any injury to private property, any invasion of rights, or any infringement of federal, State or local laws or regulations, nor does it obviate the need to obtain required authorizations or approvals from other State, federal or local agencies as required by law.
7. **Site Access:** Authorized Person shall allow authorized representatives of the Administration access to the site of authorized activities during normal business hours to conduct inspections and evaluations necessary to assure compliance with this Authorization. Authorized Person shall provide necessary assistance to effectively and safely conduct such inspections and evaluations.
8. **Inspection Notification:** Authorized Person shall notify the Administration's Compliance Program at least five (5) days before starting authorized activities and five (5) days after completion. For Allegany, Garrett, and Washington Counties, Authorized Person shall call 301-689-1480. For Carroll, Frederick, Howard, Montgomery and Prince George's Counties, Authorized Person shall call 301-665-2850. For Baltimore City, Anne Arundel, Baltimore, Calvert, Charles, and St. Mary's Counties, Authorized Person shall call 410-537-3510. For Caroline, Cecil, Dorchester, Harford, Kent, Queen Anne's, Somerset, Talbot, Wicomico and Worcester Counties, Authorized Person shall call 410-901-4020. If Authorization is for a project that is part of a mining site, please contact the Land Management Administration's Mining Program at 410-537-3557 at least five (5) days before starting authorized activities and five (5) days after completion.
9. **Sediment Control:** Authorized Person shall obtain approval from the Anne Arundel Soil Conservation District for a grading and sediment control plan specifying soil erosion control measures. The approved grading and sediment control plan shall be included in the Approved Plan, and shall be available at the construction site.
10. **Federally Mandated State Authorizations:**
    N/A Water Quality Certification: Water Quality Certification is granted for this project provided that all work is performed in accordance with the authorized project description and associated conditions.
    N/A Coastal Zone Consistency: This Authorization constitutes official notification that authorized activities are consistent with the Maryland Coastal Zone Management Program, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended. Activities within the following counties are not subject to this requirement:
    Allegany, Carroll, Frederick, Garrett, Howard, Montgomery, and Washington.

11. **Best Management Practices During Construction:** Authorized Person, its employees, agents and contractors shall conduct authorized activities in a manner consistent with the Best Management Practices specified by the Administration.
12. **Disposal of Excess:** Unless otherwise shown on the Approved Plan, all excess fill, spoil material, debris, and construction material shall be disposed of outside of nontidal wetlands, nontidal wetlands buffers, and the 100-year floodplain, and in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands.
13. **Temporary Staging Areas:** Temporary construction trailers or structures, staging areas and stockpiles shall not be located within nontidal wetlands, nontidal wetlands buffers, or the 100-year floodplain unless specifically included on the Approved Plan.
14. **Temporary Stream Access Crossings:** Temporary stream access crossings shall not be constructed or utilized unless shown on the Approved Plan. If temporary stream access crossings are determined necessary prior to initiation of work or at any time during construction, Authorized Person, its employees, agents or contractors shall submit a written request to the Administration and secure the necessary permits or approvals for such crossings before installation of the crossings. Temporary stream access crossings shall be removed and the disturbance stabilized prior to completion of authorized activity or within one (1) year of installation.
15. **Discharge:** Runoff or accumulated water containing sediment or other suspended materials shall not be discharged into waters of the State unless treated by an approved sediment control device or structure.
16. **Instream Construction Prohibition:** To protect important aquatic species, motor driven construction equipment shall not be allowed within stream channels unless on authorized ford crossings. Activities within stream channels are prohibited as determined by the classification of the stream (COMAR 26.08.02.08): N/A is a Use N/A waterway; in-stream work may not be conducted from N/A through N/A, inclusive, of any year.
17. **Instream Blasting:** Authorized Person shall obtain prior written approval from the Administration before blasting or using explosives in the stream channel.
18. **Minimum Disturbance:** Any disturbance of stream banks, channel bottom, wetlands, and wetlands buffer authorized by this Authorization or Approved Plan shall be the minimum necessary to conduct permitted activities. All disturbed areas shall be stabilized vegetatively no later than seven (7) days after construction is completed or in accordance with the approved grading or sediment and erosion control plan.
19. **Restoration of Construction Site:** Authorized Person shall restore the construction site upon completion of authorized activities. Undercutting, meandering or degradation of the stream banks or channel bottom, any deposition of sediment or other materials, and any alteration of wetland vegetation, soils, or hydrology, resulting directly or indirectly from construction or authorized activities, shall be corrected by Authorized Person as directed by the Administration.
20. **Mitigation:** Mitigation by the Permittee is not required for impacts of less than one acre to isolated nontidal wetlands with no significant plant of wildlife value.

U.S. ARMY CORPS OF ENGINEERS AUTHORIZATION

The U.S. Army Corps of Engineers does not regulate isolated nontidal wetlands and/or their buffers. No authorization is required from the Corps to complete this project per the approved plans.

APPENDIX A

FOREST STAND SUMMARY

Forest Stand:	A
Acreage:	0.75
Data Points/Stand:	2
Average DBH:	25
Number of Trees/Acre:	47
Number of Tree Species:	6
Basal Area/Acre:	75
Number of Dead Trees/Acre:	5
Number of Shrubs per Acre:	200
% Canopy Cover:	93
% Herbaceous Cover:	70
% Downed Woody Material:	1
% Exotic or Invasive Species:	55

% Dominance By Species For Stand A

Species	*# Tallied*	*% Dominance*
Quercus montana	4	27%
Prunus serotina	1	7%
Liriodendron tulipifera	5	33%
Quercus alba	1	7%
Quercus rubra	2	13%
Acer rubrum	2	13%
0	0	0%
Total	**15**	**100%**

FOREST STRUCTURE ANALYSIS

(As an average per acre for the stand)

Stand Designation **A** Structure Value **12**

The following parameters comprise an average of data collected at each point for the stand indicated above. The parameters, when combined, give a general representation of the condition and value of the stand.

The total structure value is defined by:
15-21 Priority
7-14 Good
0-6 Poor

Percent Canopy Closure	
70-100%	3
40-69%	0
10-39%	0
0-9%	0

Size Class of Dominant Trees	
Greater than 20"	3
6-19.9"	0
3-5.9"	0
Less than 3"	0

Number of Shrubs per Acre	
600 or more	0
400-599	0
200-399	1
0-199	0

Percent Herbaceous Cover	
75-100%	0
25-74%	2
5-24%	0
0-4%	0

Percent Woody Debris	
15-100%	0
5-14%	0
1-4%	0
Less than 1%	0

# of Tree Species >=6"	
6 or more	3
4-5	0
2-3	0
0-1	0

# Standing Snags per Acre	
30 or more	0
20-29	0
10-19	0
0-9	0

Forest Stand Delineation
Field Sampling Data Sheet

Property: ANNAPOLIS NECK Prepared by: M. Klebasko

Stand: A Sample Point: A Date: 10/7/14

Species	Tallied DBH		
QUERCUS MONTANA	25, 18, 18, 21, 36	Diameter of dead trees ≥6" DBH tallied at sample point	33, 22
PRUNUS SEROTINA	6	Percent canopy cover at sample point	90
LIRIODENDRON TULIPIFERA	32, 33, 21, 23, 32		
QUERCUS ALBA	33	Percent herbaceous cover at 1/100th acre plot	75
QUERCUS RUBRA	28, 28		
ACER RUBRUM	32, 26	Percent downed woody debris ≥6" diameter at 1/10th acre plot	0
		Percent invasive plant cover at 1/100th acre plot	50
		Number of shrubs per 1/100th acre plot	1

Invasive Species:
HEDERA HELIX, CELASTRUS ORBICULATA, LONICERA JAPONICA

Common Understory Species (3'-20') layer:
CARYA TOMENTOSA, PRUNUS SEROTINA, ILEX OPACA

Herbaceous Species (0-3' layer):
HEDERA HELIX, CELASTRUS ORBICULATA, LONICERA JAPONICA
VIBURNUM ACERIFOLIUM, PARTHENOCISSUS QUINQUEFOLIA, TOXICODENDRON RADICANS

Comments:

(1/100th acre plot =11.78' radius circle)
(1/10th acre plot = 37.24' radius circle)

Forest Stand Delineation
Field Sampling Data Sheet

Property: ANNAPOLIS NECK Prepared by: M. Klebasko

Stand: A Sample Point: B Date: 10/7/14

Species	Tallied DBH		
LIRIODENDRON TULIPIFERA	9,27,19,14,30,27,24,23,25	Diameter of dead trees ≥6" DBH tallied at sample point	23
ILEX OPACA	3,3	Percent canopy cover at sample point	95
ACER RUBRUM	7,18		
QUERCUS RUBRA	19	Percent herbaceous cover at 1/100th acre plot	65
		Percent downed woody debris ≥6" diameter at 1/10th acre plot	1
		Percent invasive plant cover at 1/100th acre plot	60
		Number of shrubs per 1/100th acre plot	3

Invasive Species:
HEDERA HELIX, CELASTRUS ORBICULATA, LONICERA JAPONICA

Common Understory Species (3'-20') layer:
ILEX OPACA, LINDERA BENZOIN

Herbaceous Species (0-3' layer):
HEDERA HELIX, CELASTRUS ORBICULATA, LONICERA JAPONICA

Comments:

(1/100th acre plot =11.78' radius circle)
(1/10th acre plot = 37.24' radius circle)

APPENDIX B

FOREST STAND SUMMARY

Forest Stand:	B
Acreage:	0.46
Data Points/Stand:	1
Average DBH:	19
Number of Trees/Acre:	188
Number of Tree Species:	7
Basal Area/Acre:	170
Number of Dead Trees/Acre:	3
Number of Shrubs per Acre:	0
% Canopy Cover:	85
% Herbaceous Cover:	50
% Downed Woody Material:	1
% Exotic or Invasive Species:	0

% Dominance By Species For Stand B

Species	*# Tallied*	*% Dominance*
Ilex opaca	1	6%
Acer rubrum	7	41%
Ulmus americana	1	6%
Quercus phellos	2	12%
Diospyros virginiana	1	6%
Liquidambar styraciflua	4	24%
Quercus palustris	1	6%
Total	**17**	**100%**

FOREST STRUCTURE ANALYSIS

(As an average per acre for the stand)

Stand Designation **B** Structure Value 11

The following parameters comprise an average of data collected at each point for the stand indicated above. The parameters, when combined, give a general representation of the condition and value of the stand.

The total structure value is defined by:
15-21 Priority
7-14 Good
0-6 Poor

Percent Canopy Closure	
70-100%	3
40-69%	0
10-39%	0
0-9%	0

Number of Shrubs per Acre	
600 or more	0
400-599	0
200-399	0
0-199	0

Percent Woody Debris	
15-100%	0
5-14%	0
1-4%	1
Less than 1%	0

# Standing Snags per Acre	
30 or more	0
20-29	0
10-19	0
0-9	0

Size Class of Dominant Trees	
Greater than 20"	0
6-19.9"	2
3-5.9"	0
Less than 3"	0

Percent Herbaceous Cover	
75-100%	0
25-74%	2
5-24%	0
0-4%	0

# of Tree Species >=6"	
6 or more	3
4-5	0
2-3	0
0-1	0

Forest Stand Delineation
Field Sampling Data Sheet

Property: ANNAPOLIS NECK Prepared by: M. Klebasko

Stand: B Sample Point: C Date: 10/7/14

Species	Tallied DBH		
ILEX OPACA	5	Diameter of dead trees ≥6" DBH tallied at sample point	24
ACER RUBRUM	11,17,19,9,17,30,19	Percent canopy cover at sample point	85
ULMUS SP	17		
QUERCUS PHELLOS	26,36	Percent herbaceous cover at 1/100th acre plot	50
DIOSPYROS VIRGINIANA	10		
LIQUIDAMBAR STYRACIFLUA	25,23,21,15	Percent downed woody debris ≥6" diameter at 1/10th acre plot	1
QUERCUS PALUSTRIS	23		
		Percent invasive plant cover at 1/100th acre plot	0
		Number of shrubs per 1/100th acre plot	0

Invasive Species:

N/A

Common Understory Species (3'-20') layer:

ILEX OPACA

Herbaceous Species (0-3' layer):

SMILAX ROTUNDIFOLIA

Comments:

(1/100th acre plot =11.78' radius circle)
(1/10th acre plot = 37.24' radius circle)